Engineering Issues

Dick Moberg

Moberg Research, Inc.
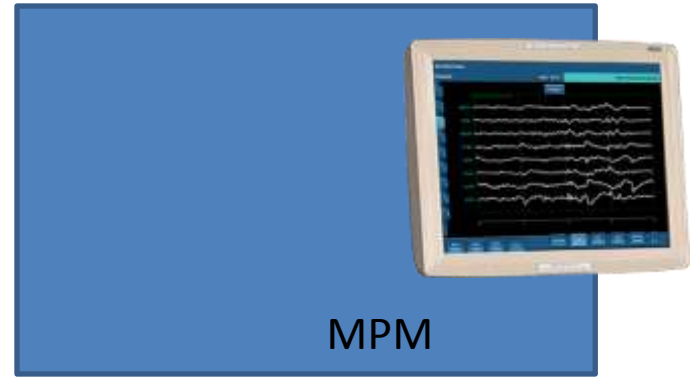
Only one other MPM available on unit …

- … that is not connected to a patient
- MPM in ICU Room 2
  - Made by a different company

- Unplugs all the bedside devices from the old MPM
- Connects all the bedside devices to the new MPM
  - They are now working again

- And now the old MPM stops working
  - Completely dead

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Woah…how did this happen?

- And now the old MPM stops working
  - Completely dead

Multi-Parameter Monitor (MPM)

MPM

Manufacturer #1

MPM

Manufacturer #2

Multi-Parameter Monitor (MPM)

MPM

Manufacturer #1

MPM

Manufacturer #2

Multi-Parameter Monitor (MPM)

Proprietary
Drivers

MPM

Manufacturer #1

Proprietary
Drivers

MPM

Manufacturer #2
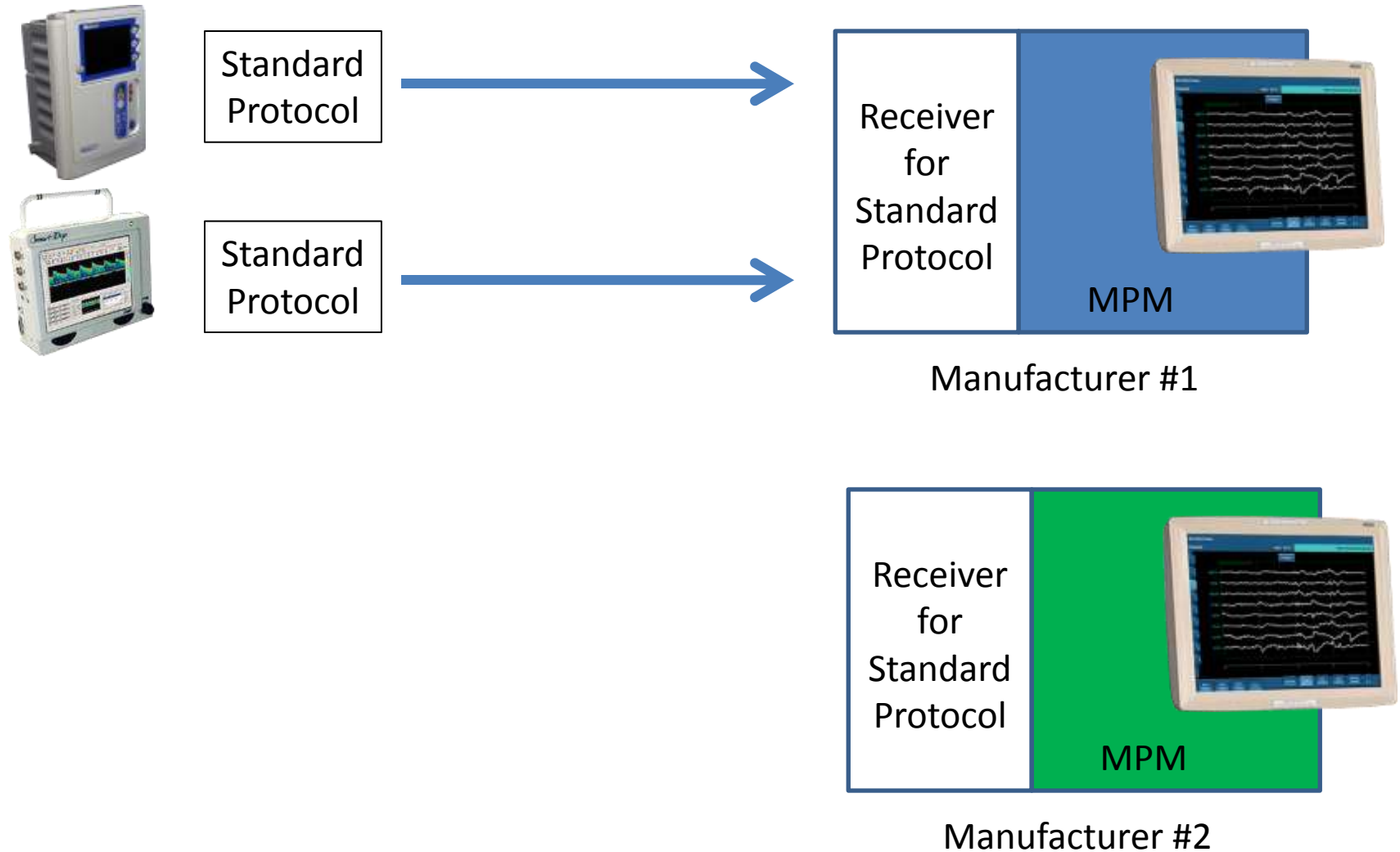
For each new device we interface:

- Negotiate with manufacturer for protocol and device info
- Write Device Definition Document (DDD)
  - Protocol and device description
  - Integration (time sync., labels, messages, data display, etc.)
  - Test protocol
- Write driver
- Make cable (custom)
- Beg, borrow, steal device for testing
- Verification testing (does the I/F work?)
- Throughput testing (does it affect the system?)
- Update MPM software
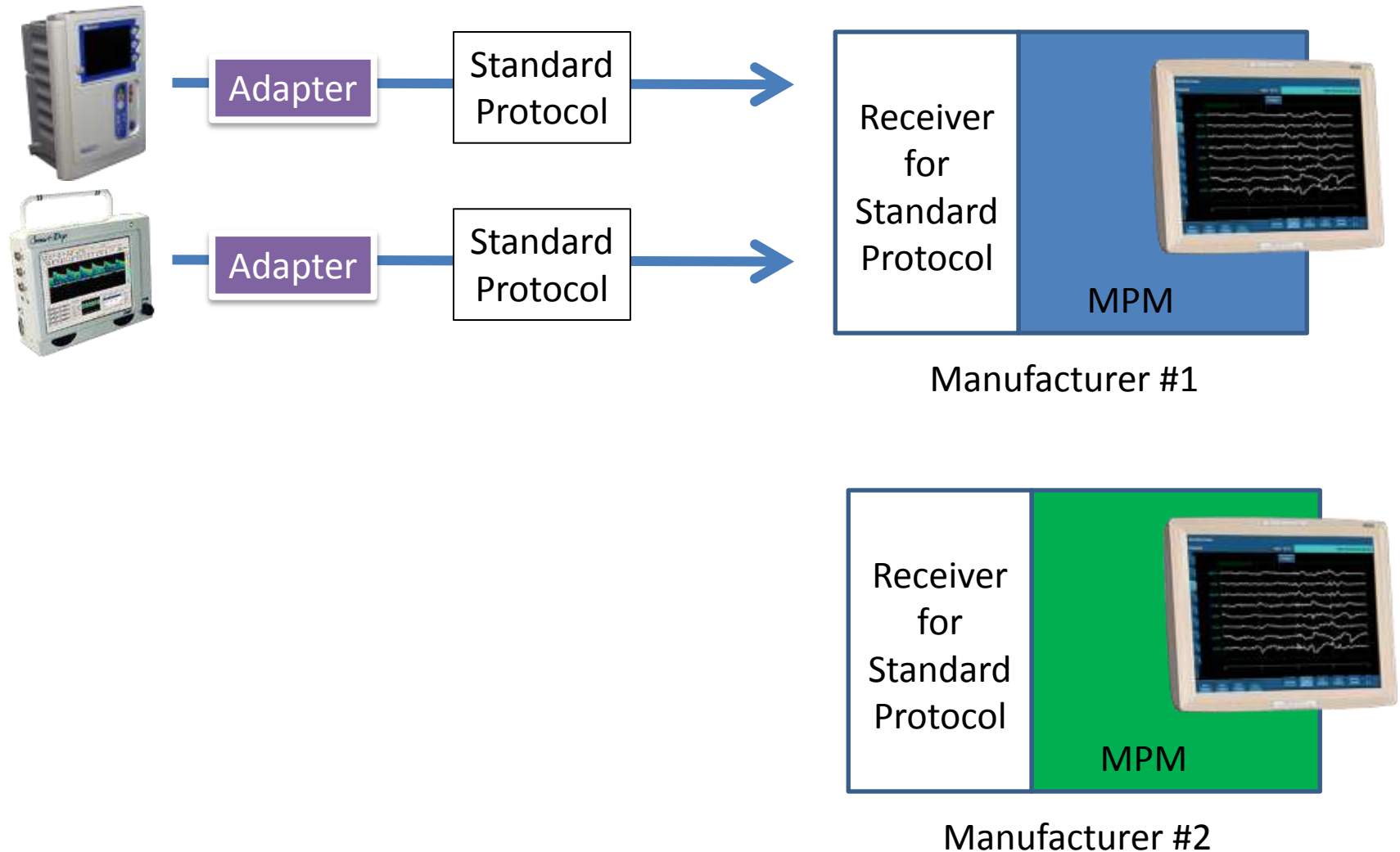- Write user info for connecting device to MPM
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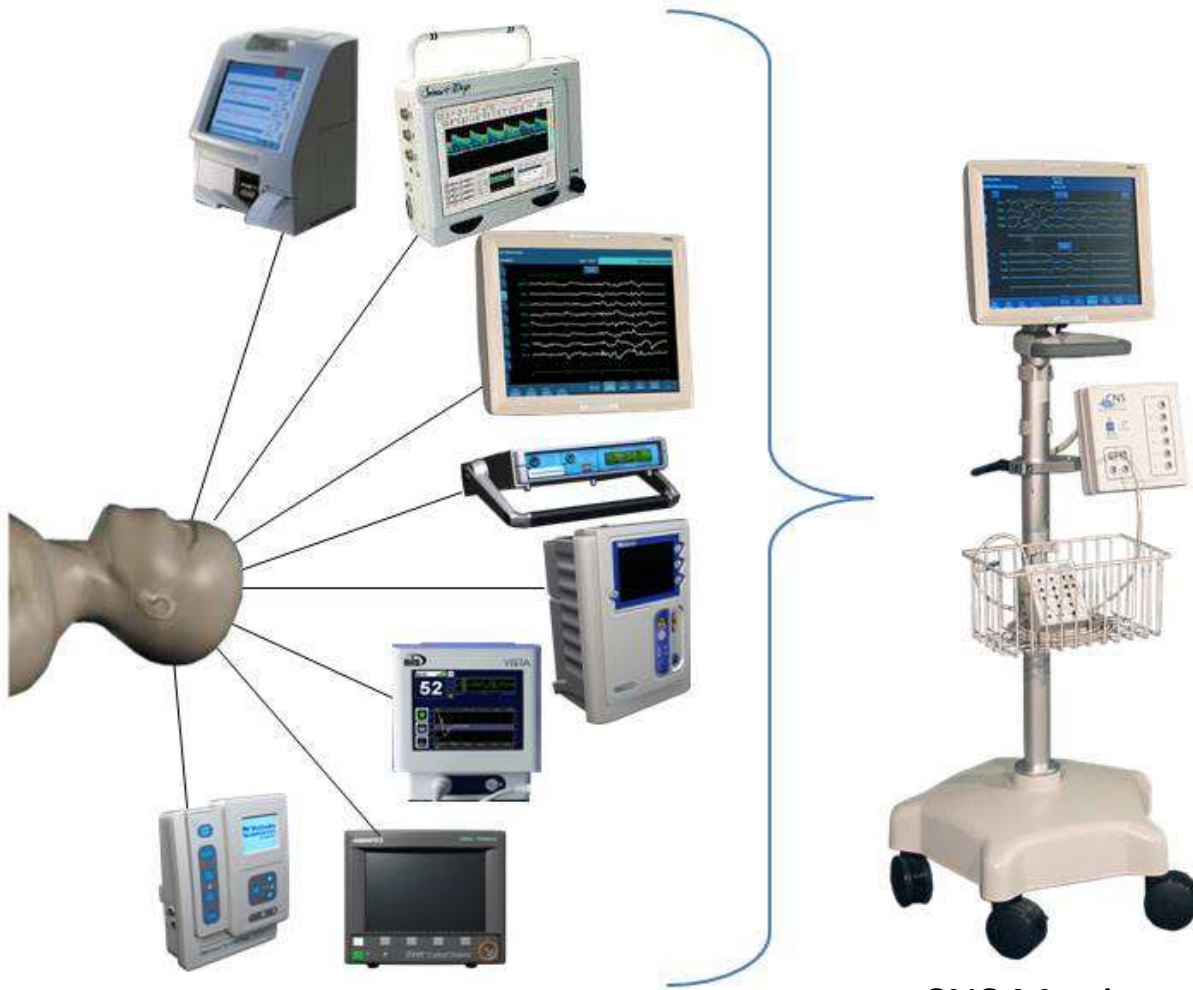- Write user info for connecting device to MPM
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Multi-Parameter Monitor (MPM)

Standard Protocol → Receiver for Standard Protocol

MPM

Manufacturer #1

Receiver for Standard Protocol

MPM

Manufacturer #2

Multi-Parameter Monitor (MPM)

Manufacturer #1

Manufacturer #2
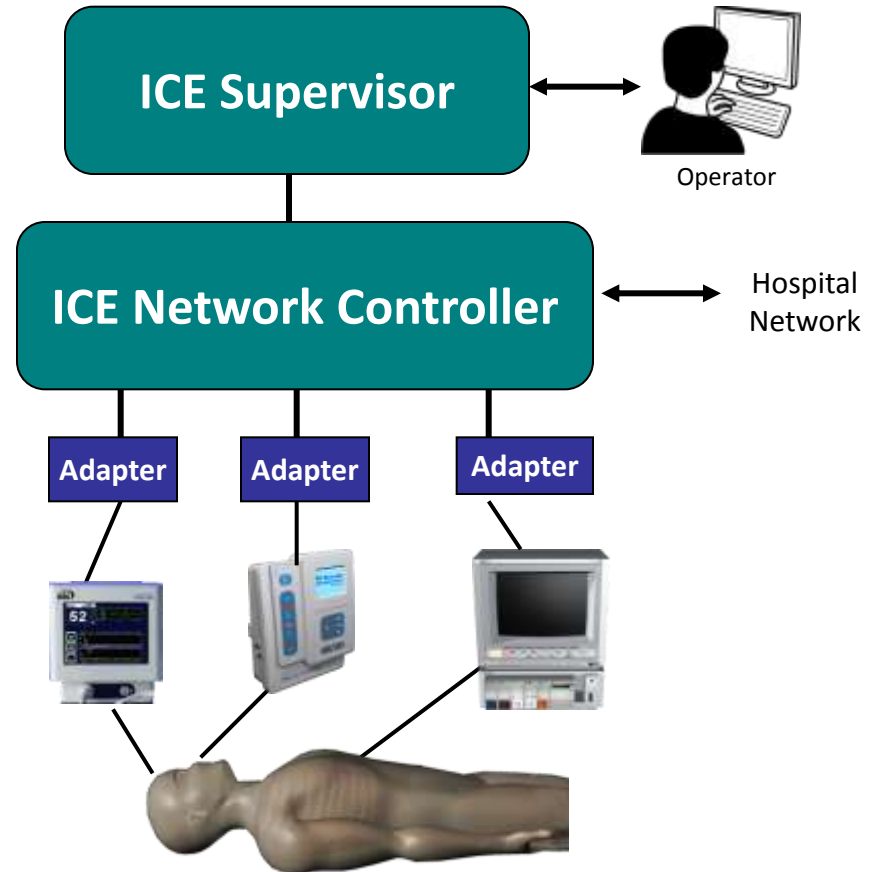
Current Product

CNS Monitor

Migrate to "ICE Compliant" System

Proprietary → **Standards-Based**

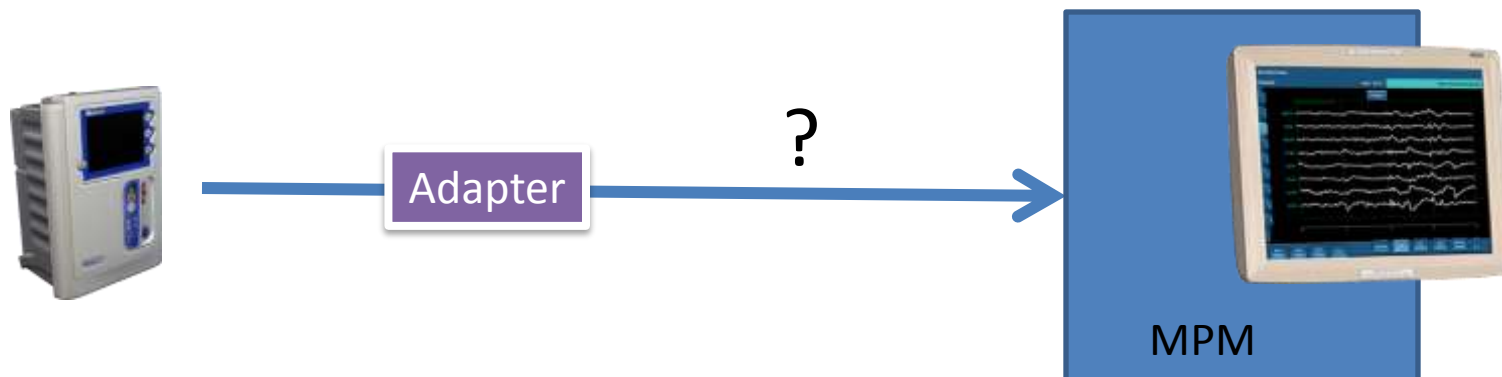# Adapters

Adapter

ISO/IEE 11073

Demonstration at TATRC

Issue: Compliance

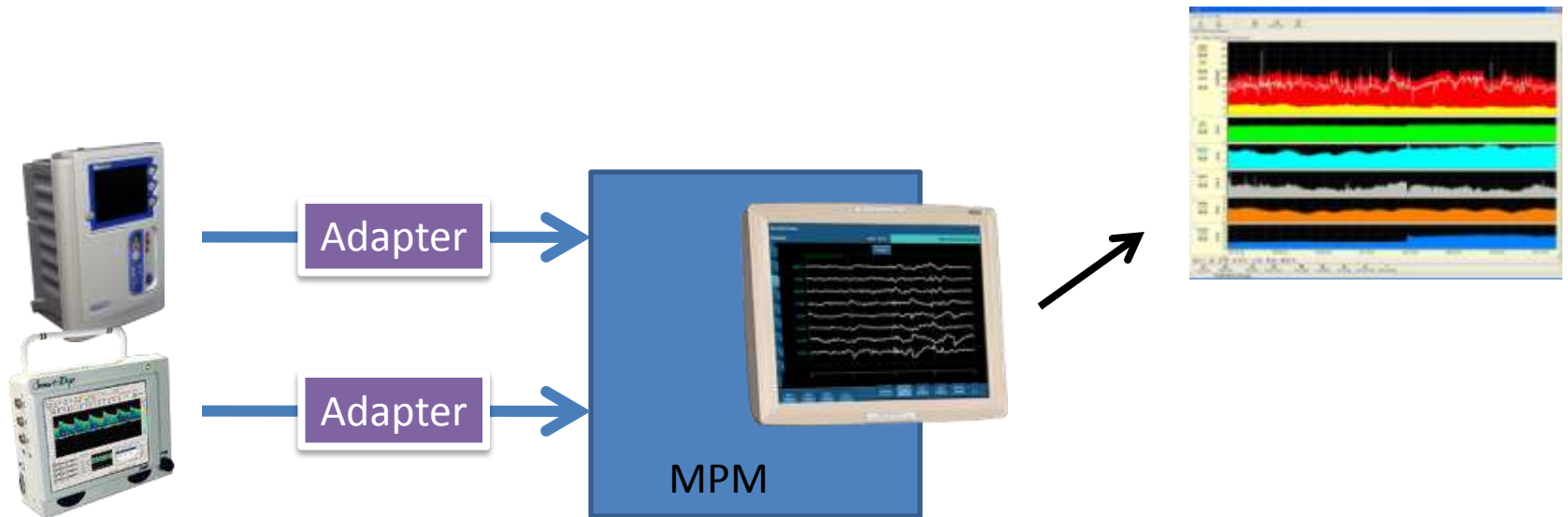- Compliance to standard does not guarantee consistency of implementation
  - Flexibility in implementation of standard
    - Private OIDs, Scanners, etc.
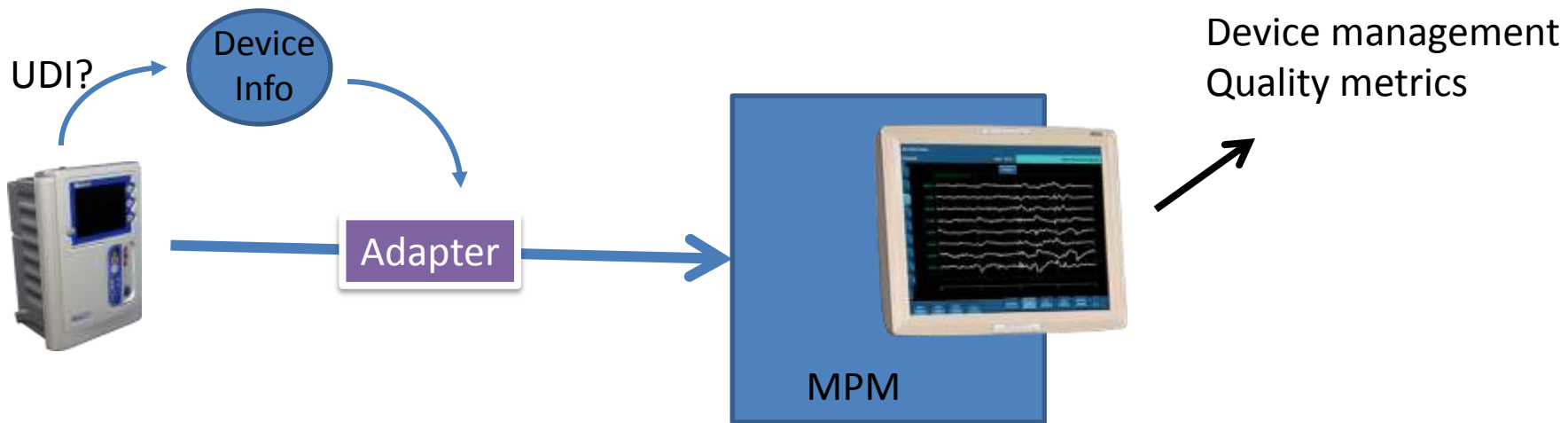

Adapter   ?   MPM

Issue: Time Synchronization

- Time synchronization
  - Well supported in 11073 but need way to report accuracy of timing

Issue: Device Association

- Adapters specific to device
- Need association between specific devices and MPM

Suggestions

- Guidance for implementation
  - "ICE Best Practices"
  - Professional organizations, FDA, etc.
- Compliance testing
  - NIST-developed testing procedures and tools
  - Third-party testing agencies